

Serial No.: 10/073,404
Filed: February 11, 2002

Group Art Unit: 2826
Examiner: V. Mandala

LISTING OF CLAIMS

Claim 1. (Currently amended) A power MOSFET device with reduced snap-back and being capable of increasing avalanche-breakdown current endurance, which has sequentially a drain with N⁺ silicon substrate, an N- epitaxial layer formed on said N⁺ silicon substrate, a source contact region formed of N⁺ doped well and P⁺ doped well implanted after etching in a P⁺ well formed on said N⁺ epitaxial layer, and a gate electrode with deposition of polysilicon above a channel region between said N⁺ epitaxial layer and N⁺ source contact region, said device is characterized in that: ~~Said said~~ source contact region is formed by etching into said P⁺ well first and implanting P⁺ dopant to the interface between said N⁺ epitaxial layer and P⁺ well, and the source contact region of said N⁺ well and that of said P⁺ well are not at the same level and are separated by at least a portion of the P⁺ well, by which it is possible to increase the avalanche-breakdown current durable capability of the power MOSFET device.

Claim 2. (Canceled)

Claim 3. (Currently amended) A power MOSFET device comprising:

- an N⁺ silicon substrate;

- a gate electrode;

- an N⁺ epitaxial layer formed above said N⁺ silicon substrate, at least a portion of which is intermediate the N⁺ silicon substrate and the gate electrode;

- a P⁺ well implanted in the N⁺ epitaxial layer;

- a source contact region, etched into the P⁺ well, and formed of an N⁺ doped well and a P⁺ doped well, wherein the P⁺ doped well interfaces the N⁺ epitaxial layer and the P⁺ well, and the N⁺ doped well is located above the P⁺ doped well and separated from the P⁺ doped well by at least a portion of the P⁺ well ~~spaced apart from and located above the P⁺ doped well~~; whereby the snap-back is reduced and the avalanche-breakdown current endurance is increased.

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Claims 4-8: (Cancelled)

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